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Bush, S. R., & Marschke, M.

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Social and political ecology of fisheries and aquaculture in Southeast Asia

Simon R. Bush and Melissa Marschke

Introduction

Southeast Asia's coastal ecosystems are under enormous pressure from a broad range of processes, including over-fishing and a growth in aquaculture, offshore oil and gas, the development of coastal tourist resorts, and the extensive mining of coastal sand. These processes both impact and contribute towards the region's economic transition. As populations and investment in coastal regions have grown over the last 25 years, so too have claims over land and biotic resources as new, often global, industries have sought access to and control over fish production through both fisheries and aquaculture. For many Southeast Asian coastal dwellers relying on fish and other living aquatic resources for their livelihoods, these new relations of production and patterns of ownership have proven exclusive and inequitable. At the same time, a series of local and global environmental governance initiatives, ranging from community-based management to state and market conservation arrangements, have been posed as innovative solutions designed to address environmental concerns over fish production. Whether these initiatives can also lead to more equitable fisheries and aquaculture production remains an ongoing area of research.

This chapter explores the tension between governance and equity in Southeast Asian marine fisheries and aquaculture production by reviewing how social, economic and political relations influence the environmental outcomes associated with changing production practices. To do so, we use a political ecology lens, which enables us to consider both the material and discursive conflicts surrounding resource access, use and regulation at a variety of scales (Hirsch and Warren, 1998; Forsyth, 2003; Peet et al., 2010). Political ecologists argue that a 'governance turn' has taken place with regard to fisheries use and management. The case-based approaches used by political ecologists in the late 1990s have turned to more critical assessments of environmental governance networks, including how contested interests influence decision-making over fish production practices (see Béné, 2005). As this chapter demonstrates, the practice of fisheries management in Southeast Asia also reflects this governance turn, with the narrow set of approaches being implemented – licensing, co-management, area-based and chain-based approaches – all coalescing around singular relationships that risk isolating fishers and fish farmers from their wider context (figure 1). Building on the work of Campling et al. (2012), we engage political ecology to question critically how new

governance mechanisms can improve the environmental performance and wider distributive aspects of fish production in regions such as Southeast Asia.

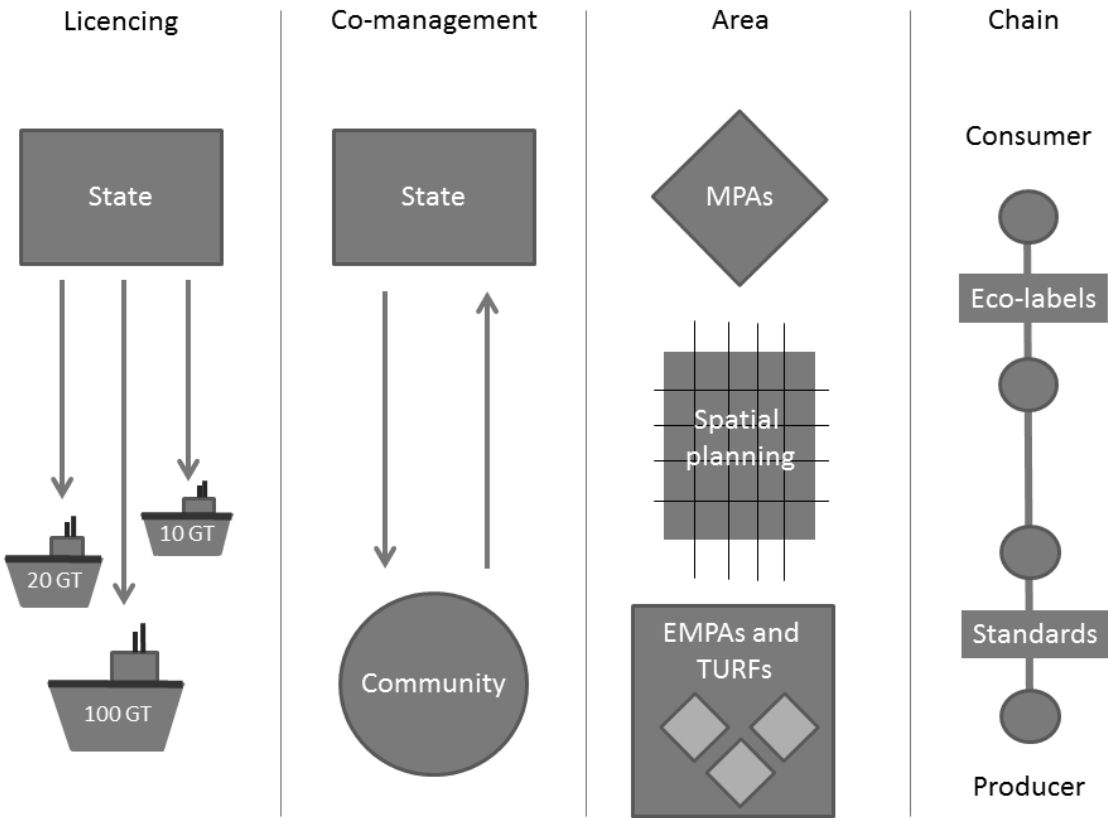


Figure 1 Common governance approaches for fisheries in Southeast Asia.

The four management systems represent the key modes of fisheries and aquaculture governance in Southeast Asia. From left to right, the figure also illustrates the shift from state- to market-based approaches to governance, as well as a range of governance scales from territorial waters, communities, areas and farms/fisheries. TURFs are territorial user rights for fishing and EMPAs are entrepreneurial marine protected areas.

We arrange our chapter into four related themes that contextualize environmental governance of fish production within a wider set of social and political relations. We first turn to the perceived problem of excess capacity in Southeast Asia fisheries and look at attempts to arrest fisheries decline. Second, fisheries are placed in their wider environmental context by looking at how other sectors competing for coastal resources, as well as management measures designed to protect them, have enclosed fishing grounds and marginalized the communities exploiting them. Third, we investigate the role of regional and international markets for fish products by outlining what challenges increased consumer demand, especially in Asian economies, is placing over resource exploitation, as well as what opportunities the trade presents for promoting more responsible production through environmental certification. Finally, we turn to the role aquaculture has played in supplementing both national and global fish consumption while

also leading to conflicts of its own in coastal regions of Southeast Asia. As such, aquaculture also represents a new domain of environmental regulation within which questions of equity remain highly relevant. The conclusions of the chapter revisit the challenges of fisheries and aquaculture and show how fish-based economies and ecologies in the region are dependent on the complex interaction of multi-scaled social and political relations.

Arresting fisheries decline

It is estimated that fisheries resources in Southeast Asia have been fished down to 5–30 per cent of their unexploited levels; in the Gulf of Thailand alone, biomass is estimated to be only 8 per cent of 1965 levels (Pomeroy et al., 2007; Salayo et al., 2008). Fishers have also reported lower catches per unit effort (CPUE), and note that the size and diversity of fish species have significantly decreased in the past decade (Nao and Lieng, 2008; Long et al., 2008). This is particularly the case in near-shore fisheries, which have seen enormous increases in fishing capacity but also a gradual reduction in trophic level of the species caught (the so-called ‘fishing down the food web’ thesis of Pauly and Christensen, 1995), which unabated can lead to an overall decline in the productivity and value of fishery resources (Pitcher and Lam, 2010).

Faced with such technical appraisals of biomass, CPUE and trophic level impacts, the advice to policymakers in Southeast Asia, as well as in many other regions of the world, has been to reduce fishing capacity (Sugiyama et al., 2004; Stobutzki et al., 2006; Morgan et al., 2007; Pomeroy, 2012). Excess capacity has two dimensions: (1) the total quantity of effort being exerted in the fishery; and (2) the ability or effectiveness of fishing vessels and gears to catch fish (Pomeroy et al., 2007; Salayo et al., 2008). Reference to the absolute quantity of fishing effort is often related to near-shore and in-shore fishing areas of Southeast Asia populated by large numbers of fish-dependent households. These households rely on these fishery resources either full-time (for food and income) or part-time as they buffer their overall livelihood vulnerability to seasonal variations in agriculture or off-farm wage labour (Béné et al., 2010). But while many countries in Southeast Asia recognize up to 50 per cent over-capacity in these in-shore fisheries (Pomeroy et al., 2009), they have not, as of yet, found a solution to set in place equitable reduction programs (Béné et al., 2010). Nor have they been able to address the even greater issue of overcapacity in off-shore industrial fisheries, which opens up wider questions around the political economy of regulating resource access and the equitable distribution of resource rents.

Management of excess capacity is difficult, partially because of the open access nature of the fisheries resource in in-shore, near-shore and off-shore areas. While this open access nature does have some benefits, in the sense of being a livelihood option that poorer households can move in and out of (Béné et al., 2010), unclear ownership aggravates competition among fishers. Moreover, the general absence of enforcement of existing

fisheries laws and policies has created a situation whereby no-one is taking responsibility to do anything but harvest the resource (Siriaksophon et al., 2009). Compounding this situation is the neo-Malthusian narrative around resource decline (Henley, 2005), which focuses on population growth and over-fishing, thereby exacerbating the 'blame-the-poor' mentality that veils the complexity of 'excess' capacity in coastal fisheries. In policy terms, this has led to small-scale fisheries being seen as a focus of (co-)management activities in response to their perceived unregulated nature (Armitage et al., 2011; Nasuchon and Charles, 2010; Pomeroy et al. 2007), while industrial fisheries capacity has continued to be promoted through state subsidies (Sumaila et al., 2010), or access arrangements with distant water fleets (Swartz et al., 2010). Reflecting wider debates around land-based resources in Southeast Asia, such analysis opens up questions of scapegoating the less-powerful and the wider political economy of resource allocation by the state.

The emerging emphasis on community involvement in small-scale fisheries governance can be seen either as a timely trend towards decentralized resource governance, as promoted by donors and governments alike, or as a foolhardy idea with little chance of success given the reality of rural livelihoods in resource-dependent villages (Marschke, 2012). Nonetheless, hopes have become pinned on novel governance arrangements that involve local people living closest to a given resource. Thus, multiple donors, national NGOs, academics and government departments have supported community fisheries policies throughout Southeast Asia (cf. Ratner, 2006; Nasuchon and Charles, 2010), although the form (and name) of community fisheries varies, along with the emphasis (preservation as compared with conservation). Not all management measures, however, have been accepted by small-scale fishers and managing excess capacity, in particular, has proven to be difficult at this level (Marschke, 2012).

Evidence from Thailand, Cambodia and the Philippines shows that area-based protection and banning the use of some gear types were generally accepted management strategies because they are seen as affecting larger-scale fishers (Salayo et al., 2008). In comparison, seasonal (temporal) restrictions and effort reduction (that is, reducing excess capacity) were not accepted largely because they are perceived to disproportionately restrict the income generation of small-scale fishers. As Salayo et al. (2008) point out, this may be partially why coastal fishers see regulation as being far more pertinent for larger fishing vessels, hinting at the poverty dimension facing many small-scale fishers.

Undoubtedly, the number of large-scale national and foreign trawlers that fish in particularly efficient ways is an even bigger issue than over-fishing at a small-scale level. Although in Malaysia boat licensing has been effective in managing capacity, in most of the other Southeast Asian countries capacity appears to be increasing (Stobutzki et al., 2006). For example, in Indonesia, despite regional advice, the minister of fisheries called for a 300 per cent increase in fishing capacity in 2010 alone, with no details beyond increasing the industrial tuna fleet by 500 boats (*ANTARA News*, 2009; Salayo et al.,

2008). As with small-scale fishing, the incentive leading to overcapacity is the open access nature of the fishery. National fleets face an open access situation not because of inadequate policies, but rather because boat licensing is poorly enforced and landings, due to the large number of ports, are poorly monitored. A concerted effort at the regional level to consider options for fisheries management is desperately needed, particularly in light of national plans and policies that promote exportation of fisheries products as a way to alleviate poverty.

Wider issues related to excess fishing capacity have so far eluded all forms of governance. One of the more pressing issues is related to the severe human rights abuses on board fishing vessels in Thailand (among other countries in the region). Faced with an 80–90 per cent decline in biomass in the Gulf of Thailand, there is a growing number of reports that trawlers have resorted to varying degrees of indentured labour (EJF, 2014). As returns have fallen, Thais have moved away from the industry and have been replaced by migrant labour from neighbouring countries – making up around 90 per cent of the estimated 650,000 fish workers in the country (EJF, 2013). By exploiting these workers, boat owners look to reduce labour costs to close to zero. Within this context, the economics of overfishing are directly linked to wider social issues that have thus far not been addressed in any form of fisheries management.

Even leaving such extreme abuses aside, it is unlikely that any one form of governance could alone ensure an adequate resource supply that could be managed in a sustainable manner. For these reasons, Stobutzki et al. (2006) argue that a two-tiered system of instituting or strengthening output controls for industrial fisheries, such as quotas and licensing, and strengthening area-based user group rights for small-scale fisheries may well provide the most promising set of fisheries management solutions. While community fisheries and co-management programs are a step in the right direction, far greater analysis as to the winners and losers produced from such governance mechanisms is required, as is attention to national fleet regulation and regional conflicts. Furthermore, scholarship and practice need to move beyond old dichotomies of centralized versus community-based management and take into greater consideration the role of other coastal resource sectors and the governance arrangements that set new conditions on the distribution of interests, values and benefits for coastal fishers.

Environmental conflict

Multiple interests compete for the resources upon which small producers depend, including extractive industries (oil and gas exploration, the mining of sand), international and national fishing fleets, tourism and dive resorts, and aquaculture development (see figure 2 for an illustration of the diverse and integrated uses of coastal resources). Most of these activities result in territorial claims, leaving less and less coastline and aquatic space accessible. Although competition for marine resources has existed for decades (Chou, 1994; Valencia and Marsh, 1986), it is the intensity of competition for marine and aquatic

resources that is at the crux of recent tensions. International conflicts over resources that straddle territorial waters (for example, between Cambodia and Vietnam) are also on the rise in the region, as illustrated by the diplomatic tensions between Vietnam, China, Brunei, Taiwan, Malaysia and the Philippines over largely undetermined gas and oil resources in the Spratly Islands.

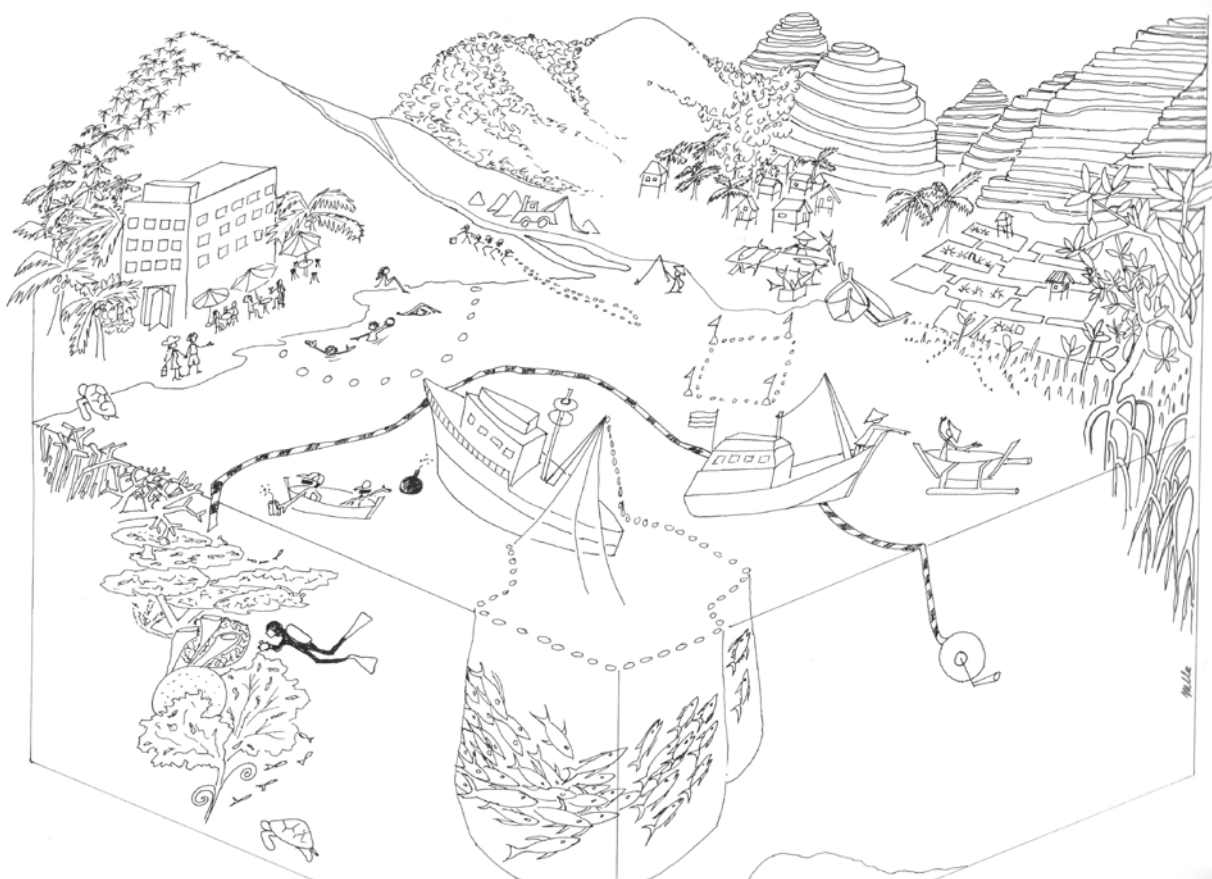


Figure 2 *Integrated nature of fisheries and aquaculture production in coastal economies of Southeast Asia*

The figure illustrates the multiple and often competing uses of diverse coastal and marine resources, ranging from inshore to nearshore and offshore fishing, aquaculture and tourism.

Source: Illustration contributed by Marielle van Riel.

Rapid transformations can exacerbate conflicts as competing interests vie for particular coastal resources. The coastlines of Cambodia and Indonesia, for example, are now in the midst of such rapid transformation. In both cases, shifts in governance (post-Soeharto in Indonesia, and post-conflict in Cambodia) have enabled actors to take advantage of landscapes that were not yet enclosed, completely extracted or incorporated into what are referred to as global circuits of production and consumption (Barney, 2009). Coastal areas of many Southeast Asian countries – such as Thailand, Malaysia and the Philippines – are

no longer frontier areas. For example, Thailand is estimated to have lost 64 per cent of its mangrove areas to coastal aquaculture (Nasuchon and Charles, 2010). In many other countries, multiple interests compete for the coastal resources upon which small-scale producers depend, including habitats taken over by oil and gas exploration, the mining of sand and tourism. Most of these activities result in territorial claims, leaving less and less accessible seascape and coastline, particularly in the near-shore areas.

Although conflicts play out at a local level, they are located in a wider political economy of the environment. The extensive sand exploration and extraction in Vietnam, Cambodia and Malaysia's coasts and rivers is, for instance, driven by Singapore's choice to construct buildings reliant on cheap resource-intensive concrete structures rather than using other (more expensive) construction techniques involving steel or glass (Marschke, 2012). These countries have policies that limit sand mining, but they are trumped by market opportunities that influence where sand is dredged (Economist, 2009). Fishers are affected by sand mining, since it disrupts local aquatic habitat and affects catch levels. Other informal policies – such as rapid tourist development done in the absence of an environmental impact assessment or other social assessments – can also increase conflicts.

Access is another issue facing local populations. As claims are made in and around shorelines (that is, lagoons, mangrove estuaries, rivers, bays, and in-shore and near-shore areas) – whether from large-scale oil, gas or sand-mining industries through national agencies creating protected areas and marine protected areas (MPAs), or by individuals staking claims through the use of a particular fixed fishing gear – fewer and smaller fishing grounds remain accessible for poorer households. This creates conflicts, which play out in numerous ways, including through the stealing of fishing gear, anger towards those practising illegal fishing (that is, electric or blast fishing), and friction between those using different gear types. Social unrest between fishers is real and is enhanced by general fishing declines, aquatic and coastal exploration, exploitation, and expansion (Marschke, 2012). Adequate conflict-resolution mechanisms do not exist, and many conflicts cannot be handled at the village level alone (Pomeroy et al., 2007; Nasuchon and Charles, 2010). It appears that those with the most 'might' (that is, those well connected individuals and those with bigger boats and more efficient gear) are often rather likely to win.

Enclosure of coastal and aquatic spaces – through fixed fishing gear, net aquaculture expansion or national MPAs – also impacts upon rural producers. In some cases, there may be benefits and new opportunities, although it is likely that more cases contribute to a general squeezing out of local producers. The establishment of MPAs within Southeast Asia is a case in point. Targets for increasing MPAs have been adopted across the region since the 2002 World Summit on Sustainable Development set a target of covering 20 to 30 per cent of marine habitats by 2012 (WSSD, 2005). Following the experience of terrestrial protected areas, considerable research has been done to better inform state agencies on how to avoid conflicts over access and enforcement (for example, Jentoft et

al., 2007). However, as the scope and range of MPAs have grown, many state agencies have been unable to maintain the resources necessary to enforce remote and often contested park boundaries. Areas closer to the coast and areas with higher tourism potential have tended to be better patrolled, with local governments devolving some control to private sector actors closely associated with the dive or resort industry labelled entrepreneurial MPAs (for example, Lundquist and Granek, 2005; Fabinyi, 2008; Lucas and Kirit, 2009; Colwell, 1999; Bottema and Bush, 2012). In addition, pelagic MPAs are now being promoted to protect highly migratory fish stocks such as tuna (Game et al., 2009). With area-based marine protection likely to continue, similar concerns over enclosure in the name of biodiversity protection will be increasingly positioned next to more immediate imperatives of coastal livelihoods and economic growth.

Balancing market challenges and opportunities

Exploitation patterns are also influenced by market relations. Like land-based commodities in Southeast Asia (Nevins and Peluso, 2008), fisheries are also increasingly subject to the vagaries of international trade and market-based regulation. These include the form and function of international commodity networks, the role of consumer demand, and market-based tools for governing sustainability. As Johnson (2006) argues, looking at small-scale fishers through this wider lens that moves beyond simplified notions of social justice and ecological sustainability is essential in revealing how this group might respond to changing economic and political institutions. Understanding the position of coastal fishers in a wider set of social, economic and political relations, radiating along the 'fish chain' both forwards and backwards from the point of capture (Thorpe et al., 2005), allows us to place fishers within a wider context of production and consumption from the local to the global scale.

Globally, 85 per cent of the total fish traded by volume is from developing to OECD countries (FAO, 2010). At an aggregate level, this trade export balance appears to be beneficial to Southeast Asia (Delagdo et al., 2003). A breakdown of export flows shows that it is mainly high value species that are traded, leaving higher volume low value (and higher nutritional) forage fish for coastal communities (FAO, 2010). However, finer scale analyses have raised concerns over food security issues by reflecting on the social distribution of export earnings to local elites and the externalities of habitat degradation of overfishing, which disproportionately disaffect small-scale coastal fishers in the region (van Mulekom et al., 2006). As evidence of 'fishing down food webs' grows, the relative contribution of low-value marine forage fish to food security in Southeast Asia, once used mainly in fish sauce, will continue to grow. Following patterns in other parts of the world (Alder et al., 2008), demand for these fish is on the rise by the urban middle class, heralding not only greater demand for fish overall but distinct 'cuisine shifts' in the species that are likely to be consumed.

From a trade perspective, access is very much determined by consumer demand and the political economy of market development. In a global assessment, Swartz et al. (2010) show that the ‘consumption footprint’ of the European Union, Japan and the United States on different fishing areas of the world is concentrated around particular geographies of influence, determined by geography, but also strategic investment in distant water fleets, fishing treaties and wider trade negotiations. Southeast Asian fisheries are firmly placed at the crossroads of these markets, selling predominantly to Japan but also the United States and the European Union. In Southeast Asia, Japan has played the biggest role in fisheries through both aid and investment in fishing and aquaculture joint ventures in countries such as Indonesia and the Philippines (Comitini and Hardjolukito, 1986). Unlike the adjacent Western Pacific, access agreements over Southeast Asian fisheries are more a regional than a global issue. But a largely undocumented sphere of influence is also emerging through new forms of bilateralism, or ‘liberalization without political pain’ (Ravenhill, 2003), as free trade agreements within the region re-orient access to and exploitation of fishery resources. The exact influence of these agreements upon already vulnerable fisheries is not yet well understood. However, recently, some influence is being seen through both the EU Illegal, Unregulated and Unreported (IUU) regulation in Thailand. In response to the combined claims of human rights abuse and unlicensed vessels, the European Union (along with the United States) has implemented trade sanctions that appear to have forced at the very least greater diplomatic engagement over fisheries sustainability.

Changing consumption patterns of seafood have also emerged, and this shift cannot be isolated from fisheries management approaches. The rising demand for live reef food fish in East and Southeast Asian markets, as well as ornamental fish in global markets, which has led to both economic and cultural shifts in resource exploitation, is a case in point. Incentives are high, with the aquarium trade in Southeast Asia worth an estimated US\$200–300 million per year (Shuman et al., 2004), while the live reef food fish trade is estimated at US\$1 billion per year (Pomeroy et al., 2008). In addition to rising demand, there has been a tendency by small- and medium-scale fishers to target evermore specialized – and sometimes damaging – fishing methods, such as blast and cyanide fishing in ecologically sensitive habitats such as coral reefs (Pet-Soede et al., 1999; Fox et al., 2003). Regulatory failures contribute to the proliferation of such practices, but understanding changing demand for these ‘new’ commodities, driven by new cultures of marine consumption, helps to identify and explain wider drivers of change.

The function of fish value chains also provides insights into how incentives for (over)exploitation are structured. Very little work has been done on the value chains of industrial fisheries in Southeast Asia. What is commonly observed across the region are complex networks of fishers, collectors and processors that facilitate the investment in infrastructure needed to exploit fisheries (for example, Bush, 2004; Ruddle, 2011). Trade relations among these networks have a particularly important function in both industrial

and artisanal fishery value chains, facilitating credit and, consequently, patronage. These quasi-credit relations are consistently seen as exploitative of fishers and detrimental to sustainable management (Platteau and Abraham, 1987). While it is likely that most of these relations are geared towards more efficient resource extraction, client–patron relations of fishers and ‘middlemen’ also provide important social functions. As Fabinyi (2009) points out, ‘middlemen’ – despite skewing market transactions in their own favour – are more trusted than politicians responsible for management, given their closer proximity and shared experience of resource abundance and decline. But, as the value chains of some commodities – particularly tuna and farmed shrimp – have become global, they have also been professionalised through the use of formal credit and contracts. The result, it seems, is the emergence of a two-tiered system of trade split between locally and globally articulated trade networks.

In global markets, quality standards and codes of conduct are also being used to put pressure on fishers’ practices, as well as national policy and local institutions for sustainable fisheries management. These new market-based ‘environmental regulatory networks’ (Vandergeest, 2007) have led to novel fisheries governance arrangements that remain poorly understood in the context of developing regions such as Southeast Asia. The Marine Stewardship Council (MSC), after successfully certifying fisheries in industrialized economies, has turned to small-scale artisanal fisheries. The first and only fishery in Southeast Asia to gain MSC certification, as of November 2009, is a hand-gathered clam fishery in Ben Tre province, Vietnam (MSC, 2010). The lack of impact that the MSC has had in the region appears to support Gulbrandsen’s (2009) claim that ‘MSC certification has favored small scale fisheries that are relatively easy to certify because of limited access, and large scale fisheries that are well regulated and can afford the comprehensive assessment process’ (p658). Although a number of fishery improvement projects have emerged in the region, aiming to steer fisheries towards MSC compliance, there are varying degrees of likelihood of successful compliance (Bush et al., 2013b; Sampson et al., 2015). Moreover, consumption in Asian markets remains a relatively unexplored dimension of market-based governance approaches. As regional trade increases, the MSC and other eco-labelling schemes may prove irrelevant unless there is a breakthrough in Asian consumer markets that have until now shown little interest in seafood labelling.

The blue revolution

Besides China, Southeast Asia has emerged as the highest aquaculture producing region in the world and now boasts the highest aquaculture expansion rates globally (FAO, 2010). Aquaculture, in comparison to capture fisheries, does offer the potential of high returns, even at a household level (for example, Ha and van Dijk, 2013), and the Southeast Asian region has seen significant rates of growth at 6 per cent per year over the past decade, with Vietnam emerging as the third-largest aquaculture producer globally (FAO, 2010). Thus, diversification beyond fishing or into aquaculture is frequently promoted as a

pathway out of poverty (Arthur and Friend, 2011). While growth in aquaculture production may contribute towards poverty alleviation, food security and general economic development – similar to what happened in parts of Southeast Asia during the green revolution (Birner and Resnick, 2010) – this may also be a transition process that excludes poorer fishing households, leads to large-scale consolidation, and contributes towards increased levels of social-ecological vulnerability. Regardless of its impact, increased global demand for fish, coupled with ongoing declines, suggests that aquaculture will likely continue to expand in much of Southeast Asia.

The boom crop character of some aquaculture species in Southeast Asia, such as shrimp and Vietnamese pangasius (Hall, 2004; Bush and Belton, 2011) has been fuelled by a combination of weak national regulation and global markets. The consequence for coastal communities has been increased exposure to a series of economic and political risks that extend beyond the temporal and socio-spatial scope of production, challenging their capacity to respond (Armitage and Johnson, 2006). For example, the boom in Black Tiger shrimp aquaculture was followed by the spread of disease and repeated crop failure, leading to what in many countries has become a high risk business (Bush et al., 2010). In response, farmers in many countries, through both the behest and the resistance of government, have recently gone through a wholesale shift to the more resilient White Leg shrimp. Attempts have also been made to avoid disease by relocating (and, in the process, dislocating) shrimp aquaculture away from coasts and coastal communities to low salinity inland systems (Flaherty and Vandergeest, 1998) or (largely experimental) super-intensive ‘closed’ systems (Otoshi et al., 2006). Overall, international and national scenarios for the transformation of shrimp aquaculture are deeply divided (Bush et al., 2010). While some view this as a positive development, relieving the coasts of the many environmental and social ills associated with shrimp production (Deb, 1998), for others it would represent the loss of a rurally dispersed source of employment and income, especially for women employed in the processing sector (Islam, 2009).

The wider liberalization of Southeast Asian economies and further integration into the global economy have increased the profile and reach of the private sector. Shrimp has proven to be typical of highly specialized non-traditional, agri-food crops sold in global markets (Hall, 2004). In Thailand, where shrimp production was adopted relatively early in the 1980s, the shrimp boom has restructured social relations of production in coastal areas. The large profits made by early adopters eventually led to overcapitalization and huge levels of indebtedness (Belton and Little, 2008). Much of the profit that was made was not reinvested in rural areas, but rather transferred to urban industrial investments (Buch-Hansen, 2003). Those with the highest prices are those with the highest levels of capital security, most often those run by the Thai multinational Charoen Pokphand Group (CP) (Goss et al., 2000). The emergence of large private sector entities such as CP in Thailand has also been observed in other Southeast Asian countries. The Vietnamese pangasius industry, for example, is experiencing a similar trend towards vertical

integration by Vietnamese and international processing companies (Loc et al., 2010; Bush and Belton, 2011; Khiem et al., 2011). The result has been, similar to Thailand, a gradual concentration of value and market access for company-affiliated producers over smallholders.

The FAO code of conduct for responsible aquaculture and private standards and certification systems have gained traction as a means of setting the industry on a path of ‘continual improvement’ rather than radical reform. Standard-setting initiatives and subsequent certification arrangements – including GlobalGAP, the Aquaculture Certification Council and the World Wildlife Fund Aquaculture Dialogues – have drawn together diverse civil society and state actors into new networked arrangements. However, resistance to certification has persisted, with southern NGOs arguing that the proliferation of standards will only legitimize consumption of what they continue to consider to be environmentally and socially destructive production systems (Béné, 2005). Criticism has also been directed towards the failure of these standards to engage smallholder producers that are unable to afford to be certified, neighbouring communities that are negatively impacted by production, and upstream chain actors that control the flow of information and finances in the industry (see Bush and Oosterveer, 2007; Vandergeest, 2007; Lebel et al., 2008; Belton et al., 2010; Bush et al., 2013a). To be successful, standards and certification networks will have to do nothing short of rearranging the social relations of aquaculture production, and in doing so redefine the political economy of coastal resource use.

It is likely that the technocratic standard-driven movement within the industry will continue, but there are new limits to how far social issues can be made legible and governed through value chains. As variously noted, the development and implementation of many of these standards are dislocated from the communities they seek to regulate (Lebel et al., 2008; Kusumawati et al., 2013). The technical standards that are being developed overlook the ways in which impacts from aquaculture are negotiated in coastal areas. It is therefore unlikely that standards and certification will succeed without bridging actors, institutions and sites of political engagement, which in turn would lead to substantively improved forms of governance. Sustainability is, in response, increasingly framed in terms of how well producers and their communities can comply with standards or find alternative means of improving self-governance within the global economy.

Conclusion: Revisiting the ‘governance turn’ in Southeast Asian fisheries

The four dimensions of Southeast Asian fisheries illustrated in this chapter – excess capacity, wider environmental context, regional and global markets, and the blue revolution – demonstrate the challenges of attaining equitable and environmentally sustainable production. Although not extensive, these four specific dimensions identify focal points for further research that can extend our understanding of the social and

political ecology of marine resource (over)exploitation in the region. Furthermore, they open up the disjuncture between the everyday realities of fish production and the limits of technocratic governance increasingly evident in attempts to address concerns over environmental sustainability. Why are issues of excess capacity continually ignored? What perpetuates conflicts between fishers and between fishers and other extractive resource industries? Can partial and uneven access to markets by fishers be remedied, and to what ends for coastal livelihoods and resource sustainability? And, will the benefits of the blue revolution be distributed to those suffering from limited or declining growth in capture fisheries production? Answering these questions will continue to require probing the intricacies of local/national power relations, but will also depend on understanding the implications of the growing range of often globally derived governance arrangements and the limitations they will face in trying to affect social and ecological change.

Addressing these questions requires greater attention to the social and political relations of fisheries production that perpetuate conflicts over resource use. Greater access by particular groups of larger, often better organised and better represented fishers to resources, at the expense of smaller-scale coastal fishers, is as much a function of their poor representation in policy circles as it is their resistance to state-led licensing schemes. Avoiding regulation can be variously interpreted as a protest against central control over their activities, reminiscent of Scott's (1985) weapons of the weak, or a fear of incurring a tax liability on the fish they land. However, the longer regulatory resistance persists, the less effective attempts to address underlying issues of overcapacity will become. Similarly, failures in making connections between fishery decline and wider environment change from other extractive industries can place a disproportionate and unqualified level of blame on fishers. If the social and economic relations that facilitate (over)exploitation by these industries (and as illustrated in figure 2) are not directly addressed, governance responses that focus on spatial planning and/or enclosure of sensitive habitats in MPAs can further marginalise fishers with the potential for no net environmental gain.

Global trade and the use of market-based governance arrangements for fisheries that extend beyond the nation state demonstrate a series of wider trade-offs. As greater market integration for seafood remains a key objective of many Southeast Asian countries, fundamental questions over the carrying capacity of resources and the equitable distribution of benefits from its exploitation will remain. Fish stocks are under pressure and the globalisation of their consumption returns is likely to exacerbate levels of exploitation, backed in many cases by national expansionist agendas at a time when reduced fishing effort is being called for by scientists. From a political ecology perspective, this expansion draws us back to fundamental questions of exploitative social relations, embedded in global markets and 'predatory' states (Evans, 1995), driving fishers to overstep Marx's metabolic rift (the schism in people's social and physical interdependence within and with their natural milieu) on a global scale, and raises central concerns over the (un)availability of high quality protein for local populations (Butcher,

2004). On the other hand, high value seafood can offer an important source of national income that at the same time may be better governed by global environmental standards, such as the MSC. But placing the future of fish stocks in the hands of northern retailers and consumers is a precarious strategy, made all the more so by the rise of markets such as China, where eco-labels have limited impact.

The expectations for aquaculture to supplement capture fisheries production in Southeast Asia are not well founded, given the extent of culture practices in the region. But the differences between export and domestic markets, in terms of species and market value, demonstrate a wider deficit in our knowledge about who might benefit from the industry and how. The gradual intensification of production, and the more integrated market linkages that it implies, is perpetuating a differentiation of producers. As a result, it is quasi-capitalist rather than quasi-peasant producers that are more likely to benefit from the expansion of the industry because of more secure access to the means of production, markets, credit and technical upgrading required for compliance to environmental standards (Belton et al., 2012). To be realised, the potential of aquaculture to contribute to overall fish production in Southeast Asia therefore also needs to encompass the wider social conditions of production. In a similar line, more consideration is needed of the effectiveness of environmental market-based governance mechanisms, such as standards and certification, under such conditions.

Reconciling the political and social ecologies of fisheries and aquaculture in Southeast Asia with wider normative frames of equity and sustainability will mean expanding beyond the narrow managerial approaches embodied in the governance turn currently being taken in the region. The consequences of narrowly defined governance are significant. ‘Siloing’ governance mechanisms, by separating them from each other, or creating simplifications at the community level (cf. Li, 2002), means that the complex interactions between fish, people and the communities in which both exist will not be addressed. It also acts to depoliticise the wider social and political relations by underplaying questions of social and political power that influence both environmental problems and potential solutions. This does not mean that such governance arrangements fail to offer potential. Instead, it emphasizes that innovation needs to reflect in situ ecologies, rather than relying on abstracted assumptions from a distance.

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